



State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES

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July 18, 2002
Letter of Deficiency
DAM #165.47

Mr. John Lebrun
City of Nashua
Public Works Division
229 Main Street
P.O. Box 2019
Nashua, NH 03061-2019

RE: Nashua Canal Dike, Nashua

Dear Mr. Lebrun

The Department of Environmental Services, Dam Bureau (DES) consistently strives to enhance the safety of dams in New Hampshire through its dam safety program. One of the many instruments that play a part in reaching this goal is our inspection program. DES is forwarding this correspondence to you to advise you that in accordance with RSA 482:12 and Env-Wr 502.02, an inspection of the subject dam was conducted on February 26, 2002. During this visual inspection and/or file review, the following deficiencies were observed:

- The upstream face of the dike has been maintained very well with respect to brush cutting and mowing activities. However, there are several areas of soil erosion and sloughing along the entire length of the dike;
2. The crest of the dam is generally uneven and has vehicle and bicycle ruts along the entire length of the crest. In addition, there are a few sinkholes located along the length of the crest;
 3. The downstream face of the dike is in poor condition and is heavily overgrown by trees. At several locations soil erosion has occurred on the downstream face, the most severe of which has been cordoned off by a chain link fence to keep pedestrians away;
 4. Both the upstream and downstream slopes of the dike have a slope greater than 2.5:
 5. There is seepage at the toe of the dike located where Mill Pond flows into the canal, which is adjacent to the high school. This area of the dike appears to be rock fill on the downstream face. Several of the rocks appear to have slid down the slope;
 6. Outlet structure #5 appears to be in good condition. There was minor debris located on the spillway crest and in the discharge channel;

The following items were noted regarding outlet structure 3:

- a. There is debris located in the discharge channel;
- b. There is severe discharge channel scour, especially on the RHS of the channel where the soil has eroded to such an extent under the concrete wall that the steel sheet piling is visible;

- c. There are several small trees growing in the discharge channel;
- d. There is soil erosion on the embankments on both the left and right hand sides of the concrete walls on both the upstream and downstream slopes. The most severe erosion is located on the left downstream embankment adjacent to the concrete wall; and
- e. There is seepage located downstream and to the right of the second steel sheet piling wall.

DES believes that the above deficiencies can be corrected by performing the following items. DES is requesting that you submit a schedule within 30 days that will allow for the completion of all repairs no later than a 3-year period:

1. Repair all areas of erosion and sloughing on the upstream face of the dike. It is recommended to re-grade the slope maintaining a minimum slope of 2.5:1 to help prevent future erosion;
2. Re-grade the crest of the dike and fill all sinkholes to maintain a constant elevation along its length as well as to remove vehicle and bicycle ruts;
3. Remove all trees and repair all of the soil erosion on the downstream face of the dike. It is recommended that the downstream slope be graded to maintain a minimum slope of 2.5:1 to help prevent future erosion;
4. Install a seepage monitoring weir to monitor and document the seepage located at the toe of the dike where Mill Pond flows into the Canal across from the high school;
5. Remove the debris from Outlet Structure #5 spillway and discharge channel;
6. Repair the following items at Outlet Structure #3
 - a. Remove the debris and trees located in the discharge channel;
 - b. Repair the scour that has taken place in the spillway discharge channel. The channel should be repaired to ensure the stability of the right concrete training wall where it has been undermined exposing the steel sheet piles;
 - c. Install riprap in the discharge channel, which is sized accordingly to prevent erosion due to velocities experienced in the channel. Sizing calculations should be submitted;
 - d. Repair the soil erosion on the embankments adjacent to the concrete training walls on the left and right sides of the spillway on both the upstream and downstream slopes;
 - e. Monitor the seepage located downstream and to the right of the second sheet pile wall; and
7. Update the operations and maintenance plan. The plan should include annual mowing of the upstream slope, crest, and downstream slope. In addition, a formal seepage-monitoring plan should be implemented which at a minimum documents the seepage four times a year.

Letter of Deficiency
Dam #165.47
July 18, 2002
pg. 3

DES is requesting that you complete and submit the attached "Intent to Complete Repairs" form, within 30 days of receipt of this letter, that will provide for correction of the identified deficiencies by the date(s) indicated above. If you believe changes to the items of work or dates are necessary, please make the changes directly on the form and provide a brief explanation. We have enclosed a self addressed stamped envelope for you to return this form.

Due to the time that has lapsed as well as additional deficiencies observed as a result of the February 26, 2002 inspection, DES will be officially closing out the 1997 LOD. Enclosed is a copy for your reference. This LOD will replace the 1997 LOD. It is our hope that the additional deficiencies as well as the outstanding deficiencies will be addressed within the schedule indicated above.

Our intent in sending you this correspondence is to make you aware of items that DES believes warrant your attention to insure the continued safe operation of your dam. It is our hope that, through the submittal of the attached form and a commitment to keeping a well-maintained dam, you will voluntarily comply with the requested items of work. If we do not receive the intent form or a similarly adequate written reply, we will assume that you are in agreement with our findings and recommendations and DES will carry out follow-up inspections accordingly.

If you have any questions or comments regarding this Letter of Deficiency or would like to be present at future inspections, please contact me at 271-3406, or write to the Water Division at the address listed on the top of the previous page.

Sincerely,

COPY

Jeffrey M. Blaney
Dam Safety Engineer

Attachments Guideline for an O&M plan, Copy of 97 LOD, Copy of O&M plan on file, DB8, DB13
cc: Gretchen Rule ✓

City of Nashua
Certified # 1000 1670 0000 0556 0554
JMB/was/h:/safety/wendy/lod/165-47lod.doc